PHENIX

TECHNICAL SUPPORT 2014

PHENIX WEEKLY PLANNING

May 29, 2014

Don Lynch

This Week

TECHNICAL SUPPORT 2014

- Run 14 Continues
- Restricted access yesterday–
  - MPC-Ex FEM updated
  - RadMon's installed
- No scheduled maintenance nextweek
- Next maintenance access day 6/11/14
- Plan for 2014 Shutdown
- Tech Support for Run 14 as required
- Support for sPHENIX efforts as required

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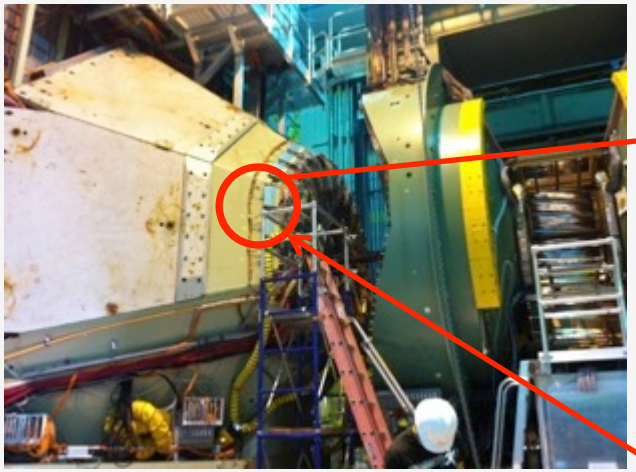
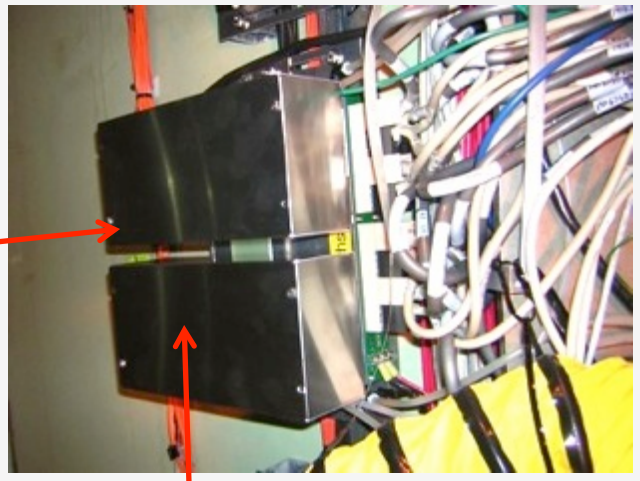
TECHNICAL SUPPORT 2014

Next Week

- Run 14 Continues
- No Scheduled Maintenance Access this week
  - Next scheduled access Wednesday 6/11
  - Work?
- Plan for 2014 Shutdown
- Tech Support for Run 14 as required
- Support for sPHENIX efforts as required

MPC-Ex Initial (Partial) Installation





FEM modules restored,
waiting for board rework

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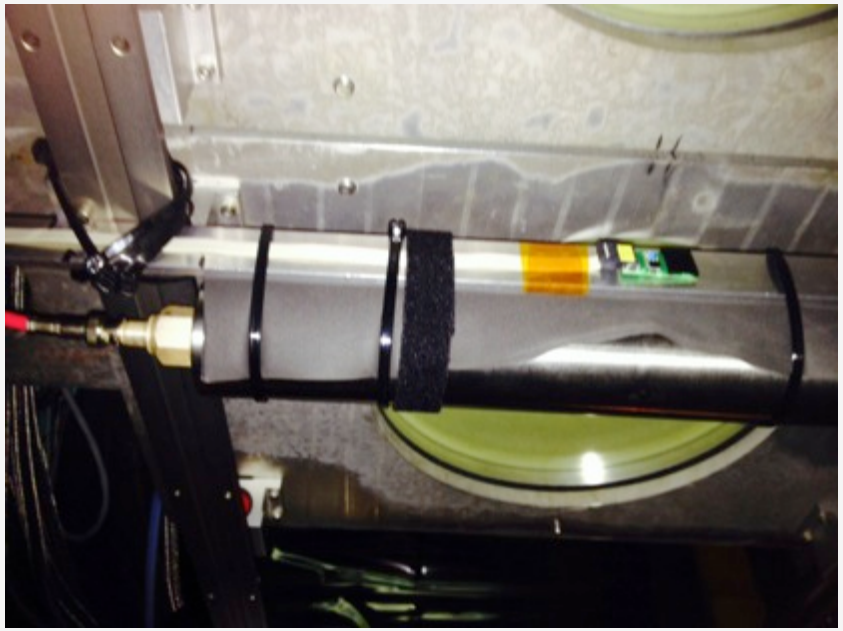
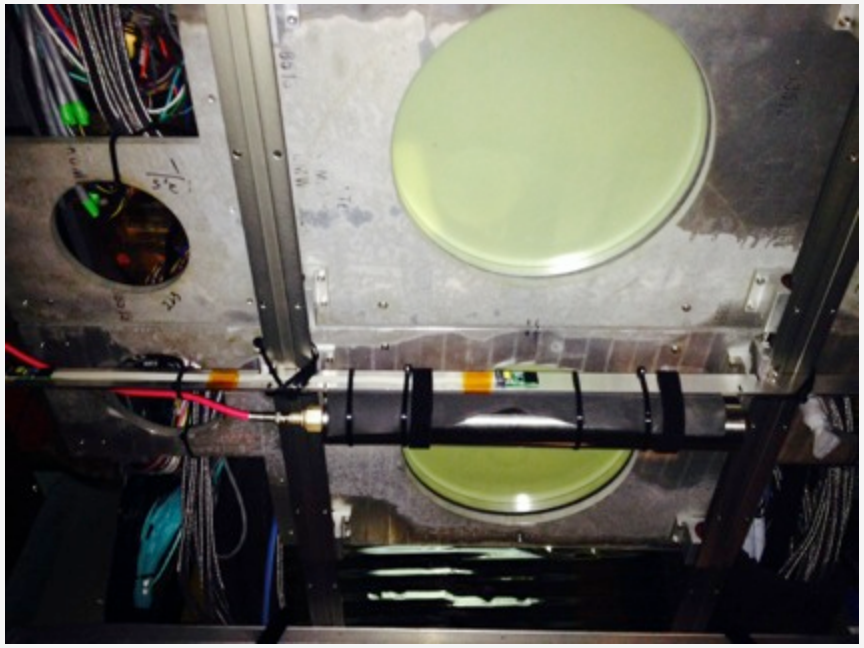
TECHNICAL SUPPORT 2014





Additional radiation monitoring & neutron detector installed yesterday in the central region

2014 planned Technical Support & 2014 Shutdown

TECHNICAL SUPPORT 2014

Support for run 14	2/3-6/30/2014
Procure & Fabricate parts for MPC-Ex North and South	1/1/2014-6/30/2014
Assemble & test MPC-Ex South, ready for installation	3/1-7/1/2014
Set up Physics lab for FVTX/VTX east	6/15/2014
End of Run Party	6/27/2014?
MuID Efficiency Measurement (Itaru, requires cooling water & isobutane)	7/7/2014
Assemble & test MPC-Ex North, ready for installation	7/1-9/25/2014
Start of Shutdown Tasks (purge flammable gas, disassemble and stow shield wall, remove collars, move EC to AH, Move MMS south, etc.)	7/14 – 7/25/2014
Remove FVTX/VTX East to PHYSICS?, repair and reinstall	7/14 – 9/15/2014
Remove MMS east vertical lampshade	7/28-7/30/2014
Troubleshoot intermittent water leak in MMS	7/30- 8/8/2014
Other Maint. In MMS	TBD
Reinstall MMS east vertical lampshade	TBD
Summer Sunday prep AH, tours and restore AH	7/30-8/15/2014
Install scaffolding in Sta 1 South	7/28/2014
Remove MPC-Ex prototype, Install new MPC-Ex South	7/28-8/22/2014
MuTr Sta 1 South troubleshooting and repairs	7/28-8/22/2014
Maint. & Repairs for MPC South, BBC South, RPC1 South, MuTr sta 1 South, as necessary	7/28-8/22/2014
Remove scaffolding from sta 1 south, Move CM South	8/25/2014
Install scaffolding in Sta 1 North	8/26-8/29/2014
MuTr Sta 1 & Sta. North troubleshooting and repairs	8/29-10/17/2014
Prep MPC-Ex North installation area	9/1-9/26/2014
Install new MPC-Ex North	9/29-10/17/2014

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2014 planned Technical Support & 2014 Shutdown (cont'd)

TECHNICAL SUPPORT 2014

Remove Sta 1 North scaffolds, Move CM North	10/20-10/24/2014
Other detector support	TBD
Infrastructure Maintenance and Improvement	TBD
Decommissioning of obsolete PHENIX detector equipment	TBD
sPHENIX Support	on-going
End of Shutdown Tasks (Move MS north, roll in EC , install collars, remove 10 ton cart, plates and manlifts, build shield wall, etc.) 10/27-11/26/2014	
Pink/White/Blue Sheets	1/17/2014
End of Shutdown Party	????
Start Flammable gas flow	????
Close shield wall, install radiation interlocks and prepare for run 14	12/31/2014
Start run 15	1/2/2015

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TECHNICAL SUPPORT 2014

Muon Tracker Shutdown Work List – summer 2014

- testing as MPC-EX installed, particularly before closing Sta-1's
- fix North Arcnet – N.2.7.1, North Sta-2 Oct-7 Chassis-1 (bad cable?)
- fix packets that were disabled for Run14
  - 11035,36 – South Sta-1 Quad-4 Chassis-3
  - 11267,68 – North Sta-2 Oct-7 Chassis-2
- replace boards for most frequent FEM problems from run
  - 11195 - North Sta-1 Quad-3 Chassis-3?
    - might have already done this; check history (changed RX 3/14/12)
  - 11064 – South Sta-2 Oct-3 Chassis-3 - unreachable
- N341 HV trip problem?
- auto-reboots of ArcNet and iocondev's for calibration?

- Access needed:
  - South & North Sta-1
  - Inside North Sta-2 on bottom
- Main Issue – Manpower

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TECHNICAL SUPPORT 2014

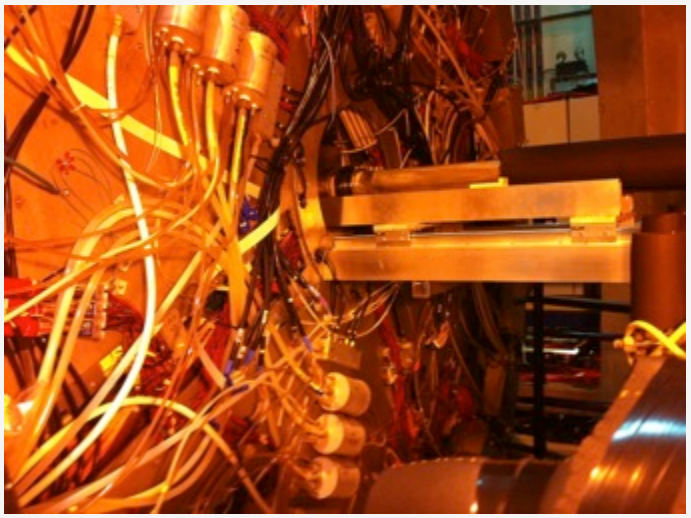
VTX/FVTX east repairs/ upgrades required

West to remain installed

Need to get PHYSICS FVTX/VTX lab ready by ~ mid June

TECHNICAL SUPPORT 2014

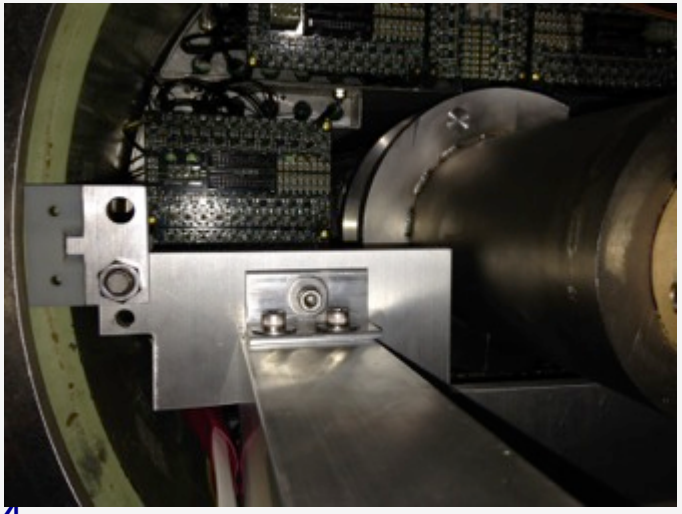
MPC-Ex N & S Final Installations This summer

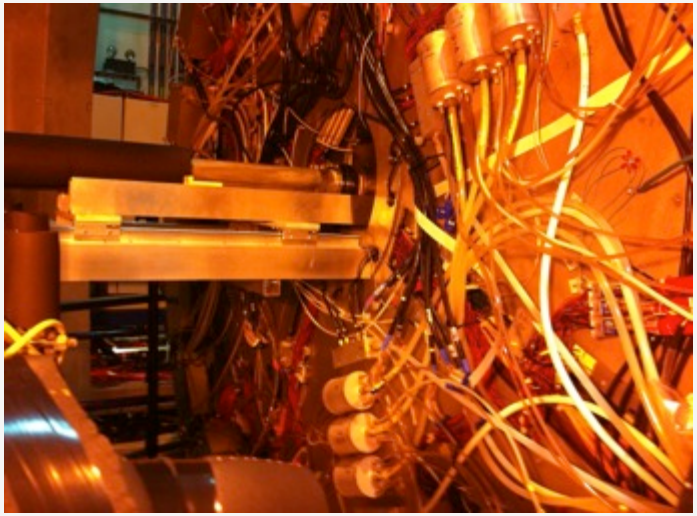


Working on North BP support design

Tungsten plates received, QC acceptable

Additional parts ordered from CS this week





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TECHNICAL SUPPORT 2014

From John LaJoie, MPC-Ex Schedule considerations

(1) Stony Brook in charge of MPC-EX testing that will be happening from now through the end of MPC-EX construction and installation.

(2) Tom Hemmick is leading a test beam effort at SLAC June 20-30th. They will test one MPC-EX hemisphere with 8 tungsten layers and 4X and 4Y carrier boards with only one MPC-EX micromodule on each layer, for a total of 8 MPC-EX micromodules. Expect the partial assembly will return to BNL shortly after the 30th (say after the 4th of July holiday).

(3) At the present time at BNL we have the tungsten plates and all production X, Y carrier boards. Carrier is that they will be sent to ISU for testing (that's where the labor is) and then come back to BNL. Testing should take ~ 1 week. Once the tested carrier boards come back to BNL they can be bonded to the tungsten plates. Frank to do this as he did the lamination previously for the Run-14 prototype. Once the bonded tungsten and carrier boards are available we should have everything on hand to mechanically assemble the detector. This leaves power boards and micromodules (see below).

(4) Steve Boose has 6 of the second revision MPC-EX power boards. Andrey has asked for one, and Stony Brook will need one for some time at least to test the power setup and micromodule pedestals. This should leave 4 of the second revision boards in Steve's hands, enough for both MPC-EX arms.

(5) Micromodule assembly is way behind schedule. We needed to make a parts change in the capacitive split that delayed assembly of the ROCs at Sierra. There were some other minor issues, but the first 50 of the remaining ROCs should be at BNL this week with the remaining 350 following in a few days. They will need to be sent to QuikPak to have the SVX4's wire bonded and encapsulated, and then they are available for lamination. All other parts and 200 sensors are already on hand at BNL, so once the assembly line starts rolling assembly and testing can hopefully proceed quickly.

We have about 30 micromodules assembled with the capacitor arrays with large crosstalk. These are at ISU (for the most part) and we have a rework shop in the midwest working to replace the arrays. These still lack the spacers so they likely have noisy pedestals and will be backup modules.

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TECHNICAL SUPPORT 2014

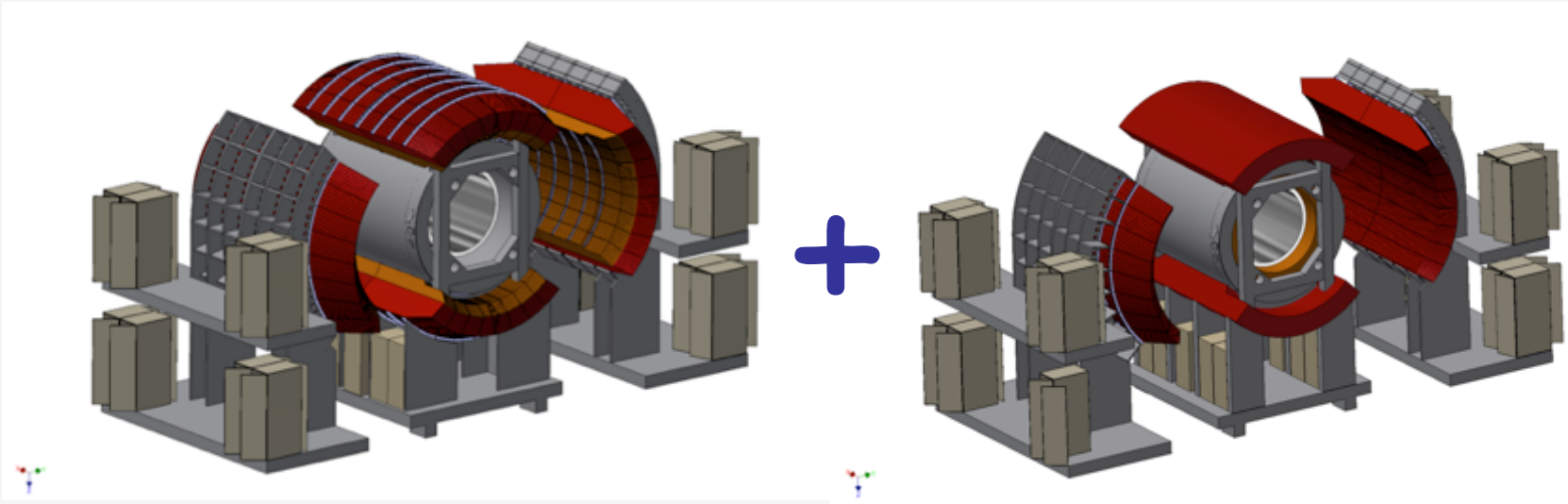
MPC-Ex Schedule considerations, Cont'd

(6) Sensor testing at Yonsei is proceeding well, and we should have the remaining 200+ sensors from Yonsei by the end of June. We already have almost all the sensors we need for the south MPC-EX.

(7) The electronics for the FEM is designed and is at Sierra awaiting a BNL PO for manufacture and assembly. The FEMs have four readout inputs, so there will be eight FEMs per arm. I think you could mount two FEMs per box, that that means four locations on the magnet for each arm (Andrei should confirm).

sPHENIX "Outie" Concept

sPHENIX "Innie" Concept



Next design improvement: combine Innie and Outie for a 3 section HCal design

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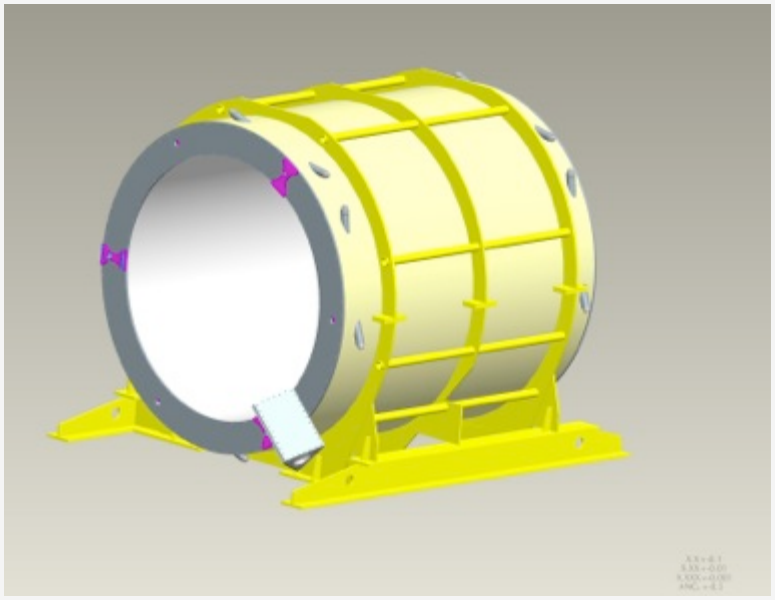
TECHNICAL SUPPORT 2014

Nothing new on magnet this week



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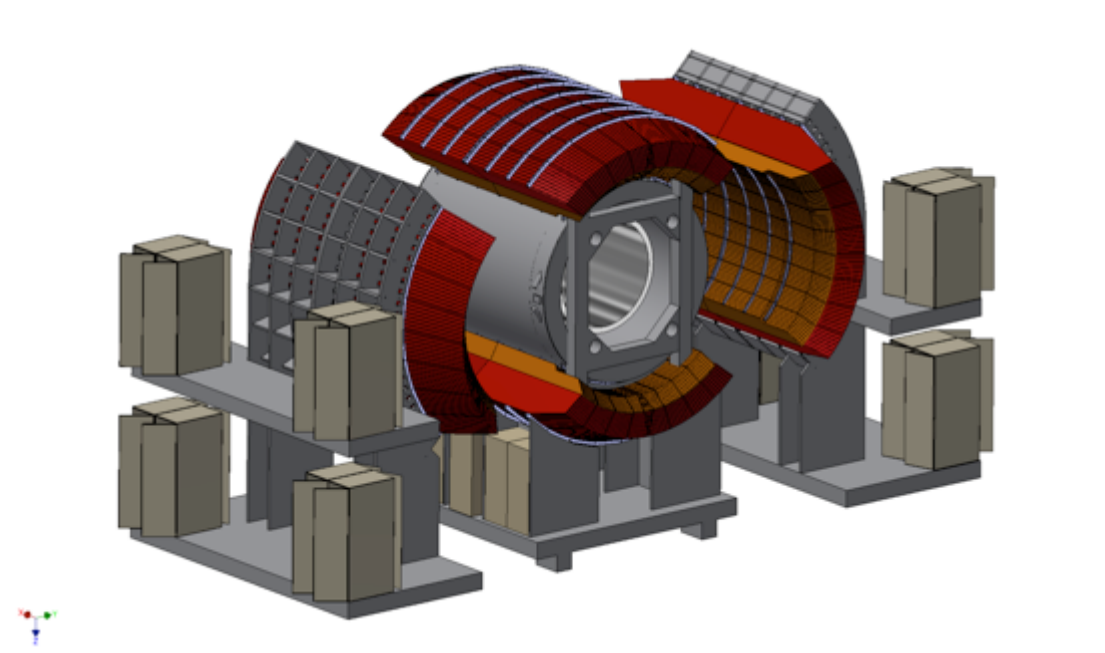
TECHNICAL SUPPORT 2014

sPHENIX
Mechanical



D. Lynch, R. Ruggiero

May 29, 2014

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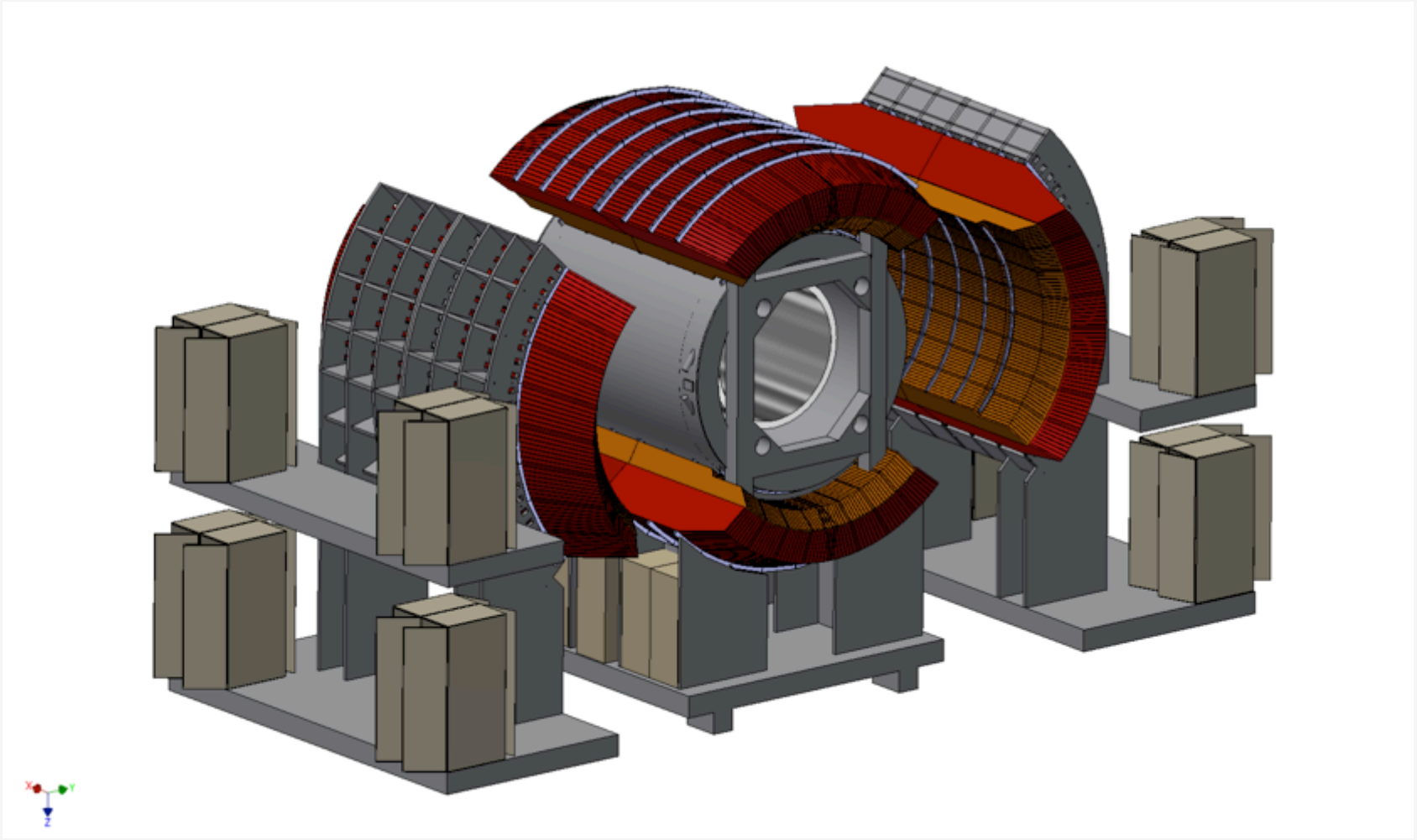
TECHNICAL SUPPORT 2014

sPHENIX Concept



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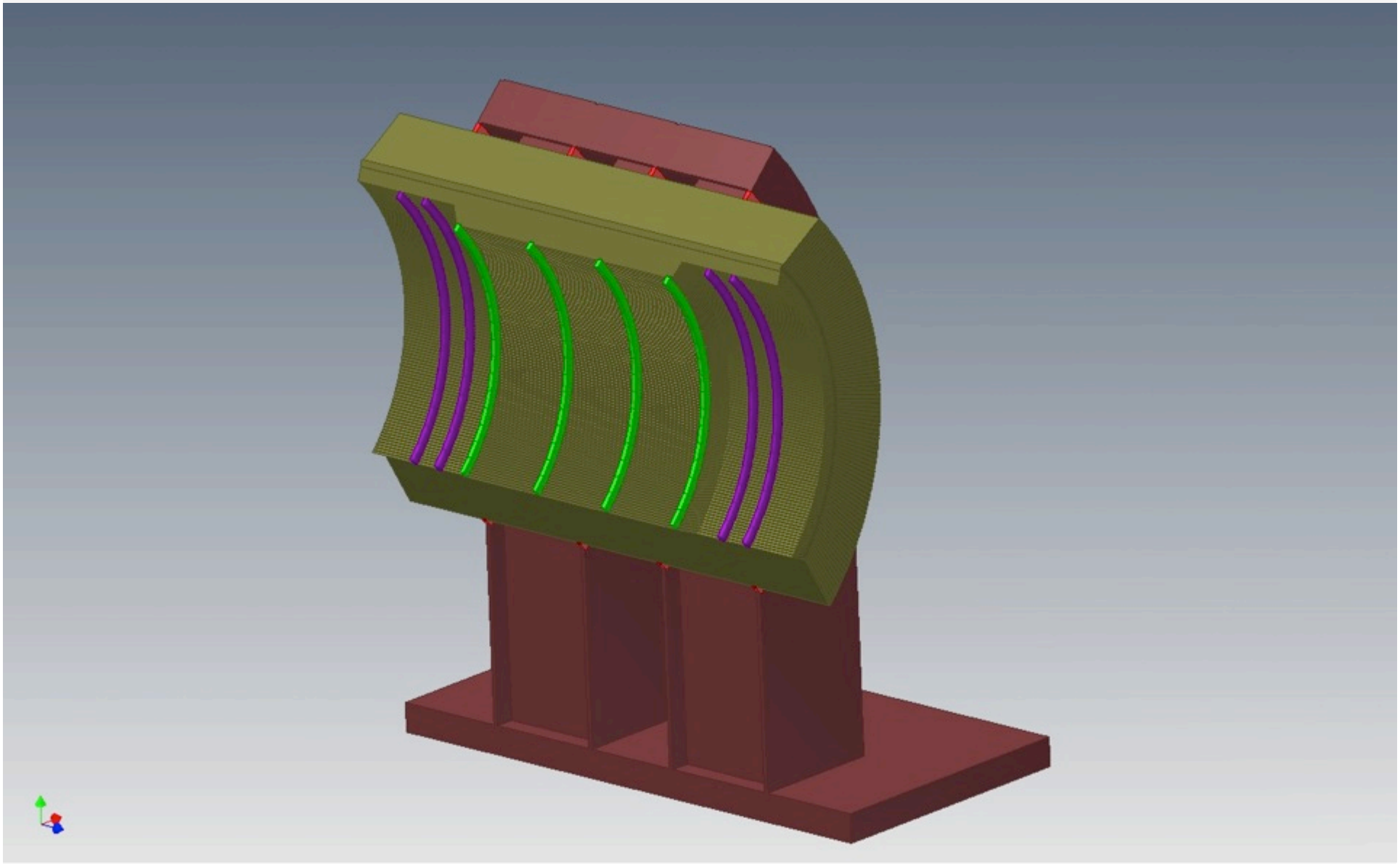
sPHENIX Mechanical Design

xPHENIX SIDE SECTION



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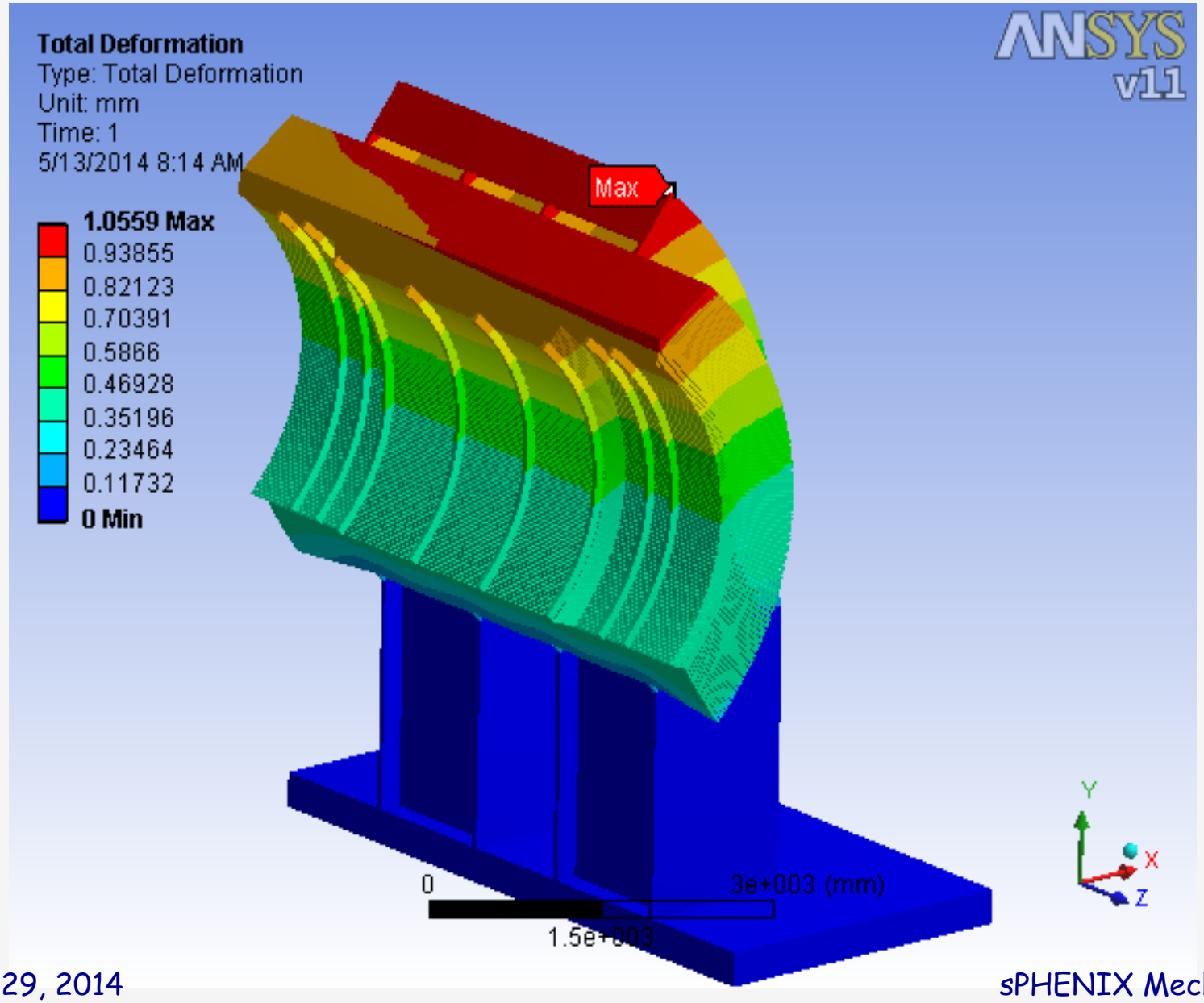
sPHENIX Mechanical Design

PHENIX

xPHENIX SIDE SECTION DEFORMATION

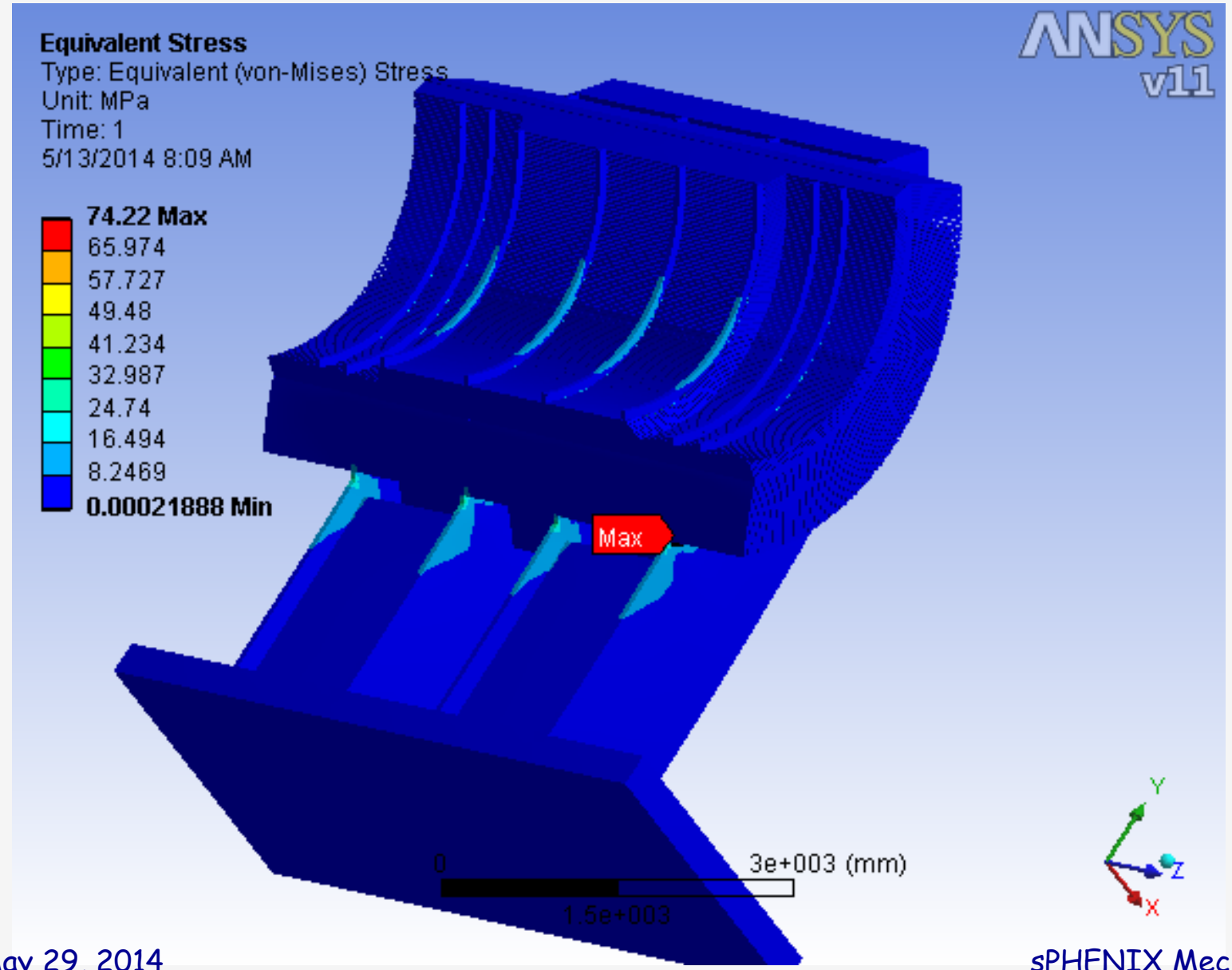
TECHNICAL SUPPORT 2014



PHENIX

xPHENIX SIDE SECTION
EQUIVALENT STRESS

TECHNICAL SUPPORT 2014



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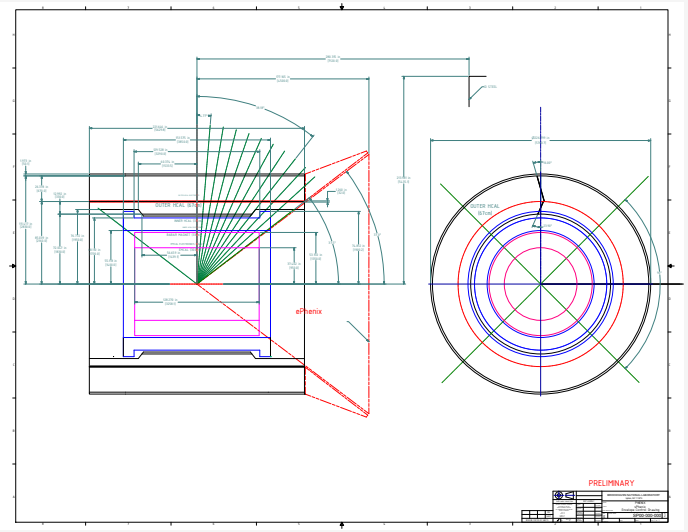
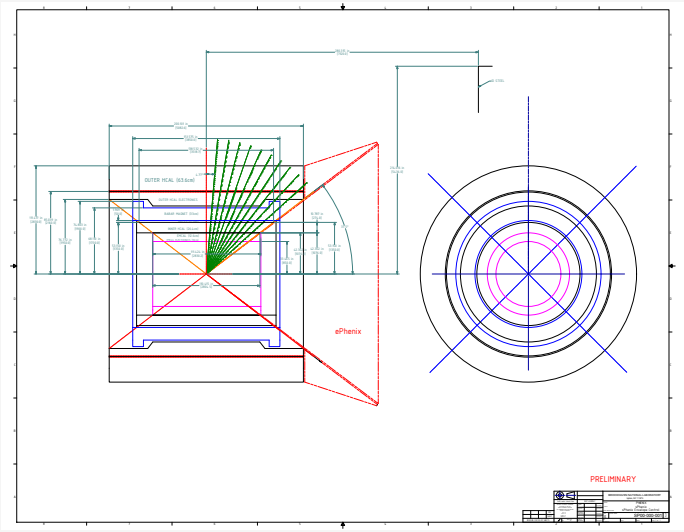
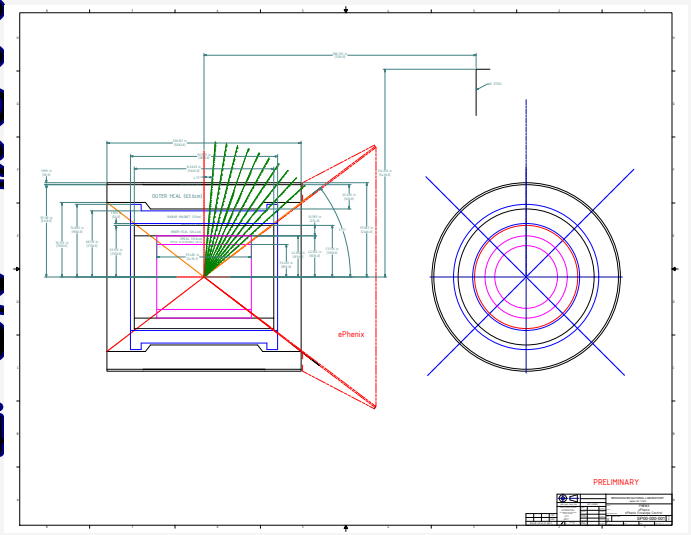
TECHNICAL SUPPORT 2014



"Outie"



"Bothie"



"Innie"

All at Rev. J

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sPHENIX Mechanical Design

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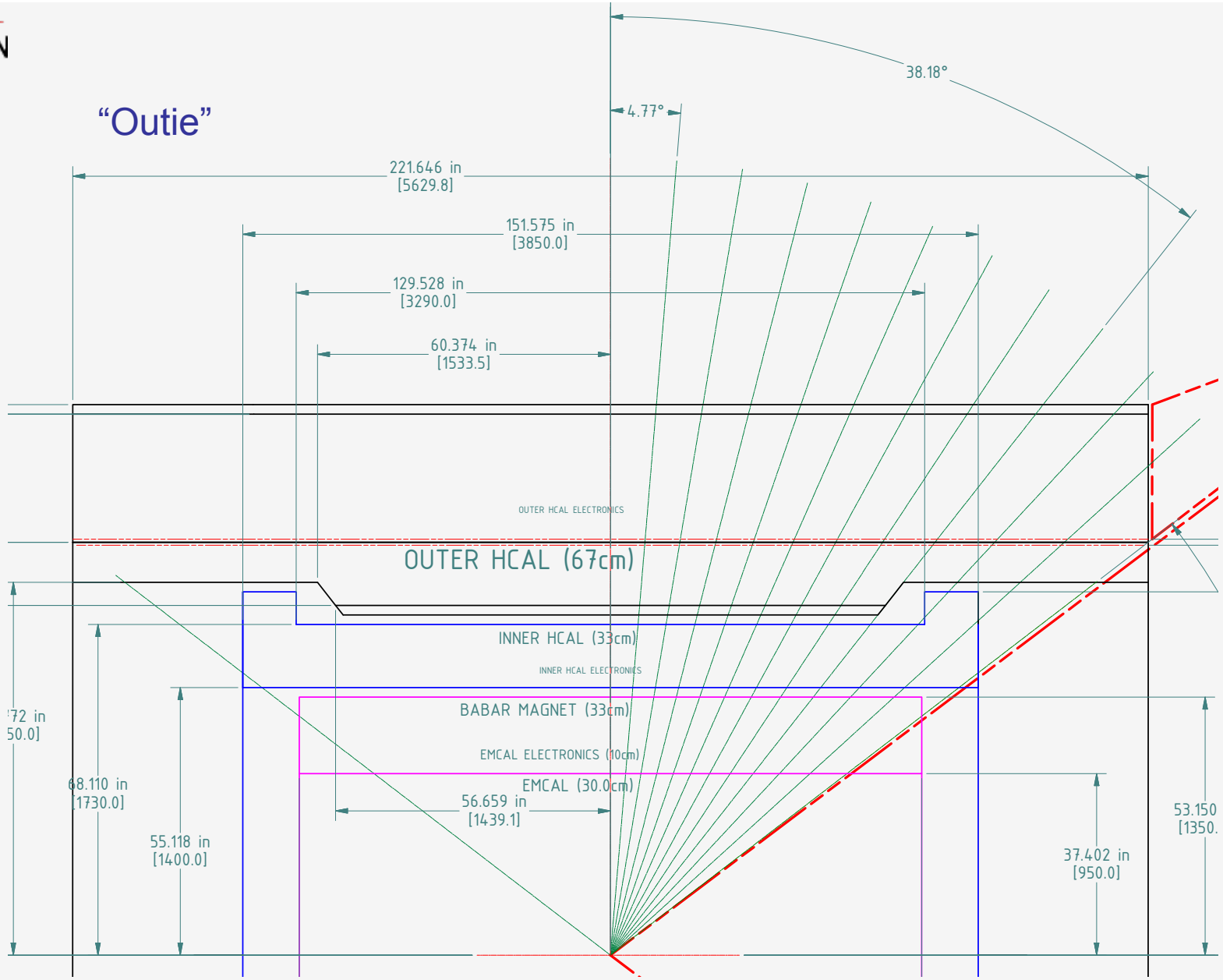
TECHNICAL SUPPORT 2014



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sPHENIX Mechanical Design

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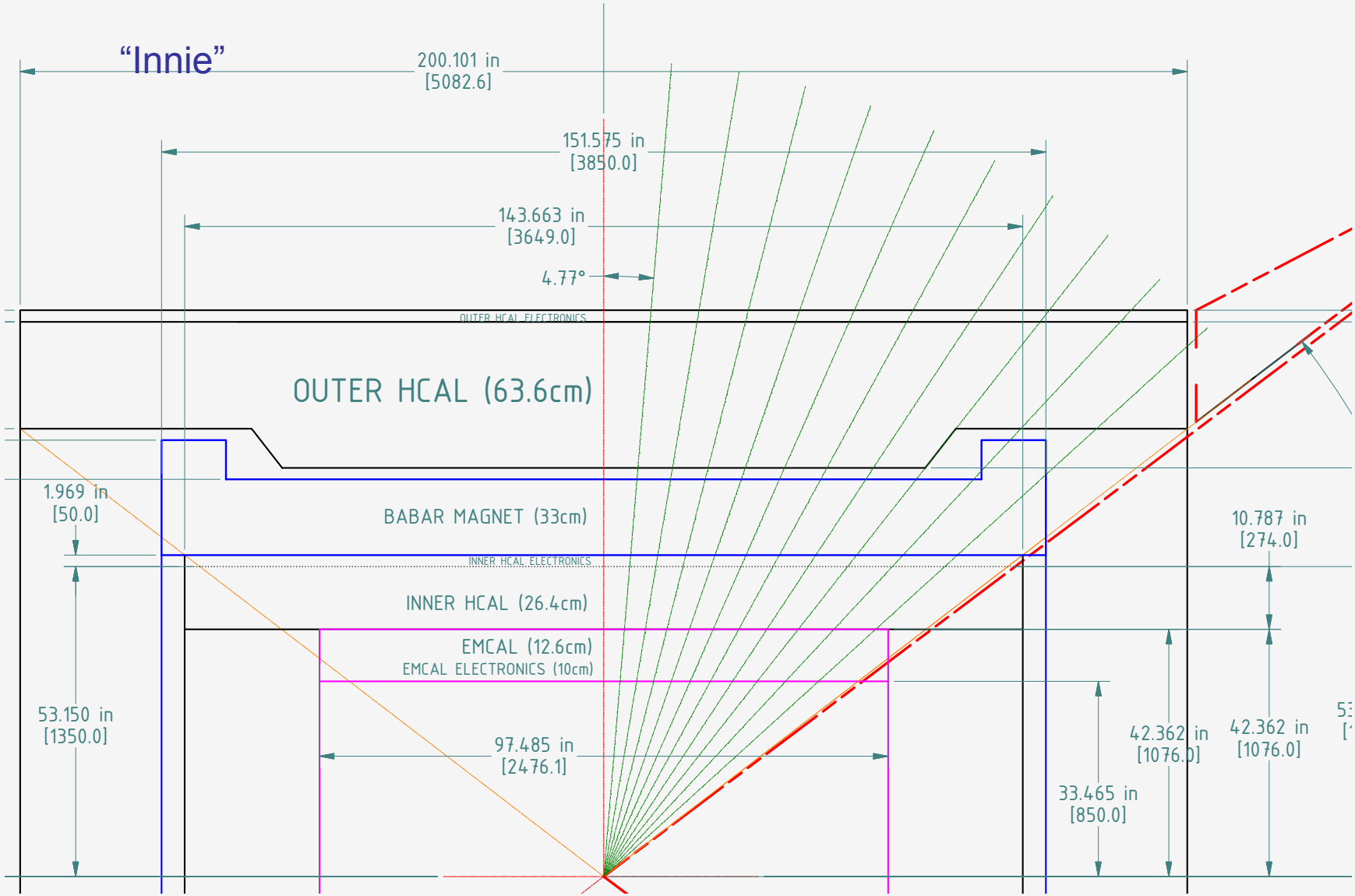
TECHNICAL SUPPORT 2014



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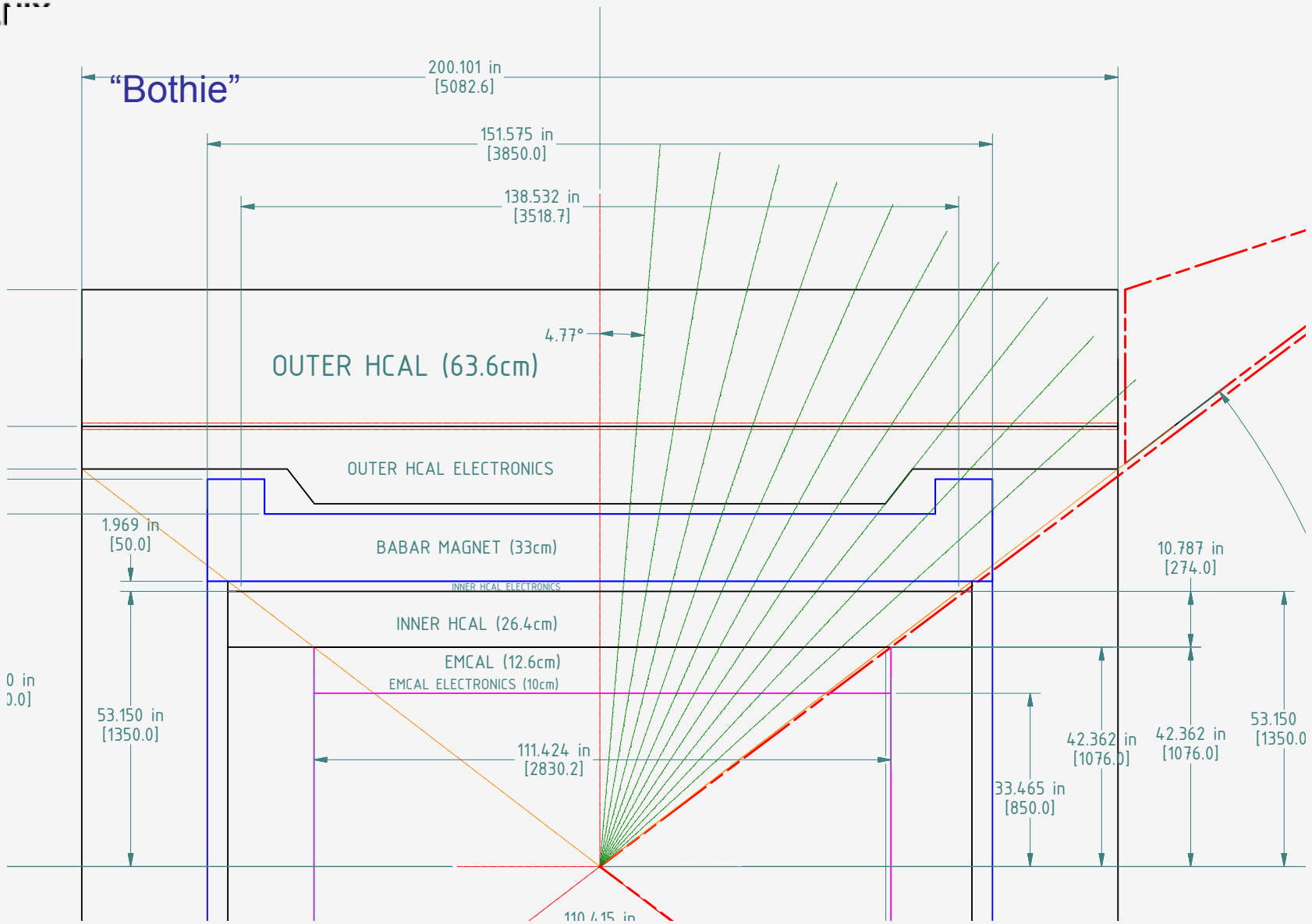
TECHNICAL SUPPORT 2014



May 29, 2014

sPHENIX Mechanical Design

PHENIX

TECHNICAL SUPPORT 2014

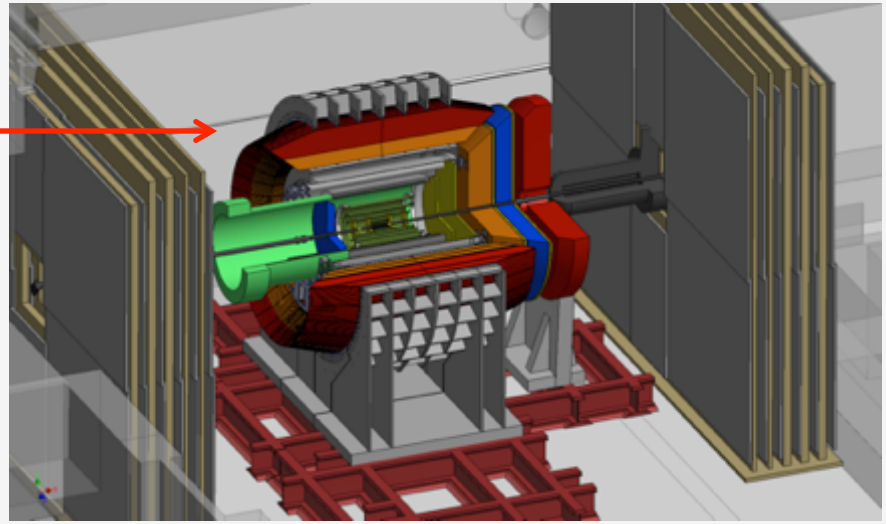
All involved in sPHENIX should make sure they have an up to date RCF account so that they can access the PHENIX Calendar and all meeting slides and to access the PHENIX drawings and Illustrations folders at:

https://www.phenix.bnl.gov/WWW/p/draft/donlynch/sPHENIXfigures/

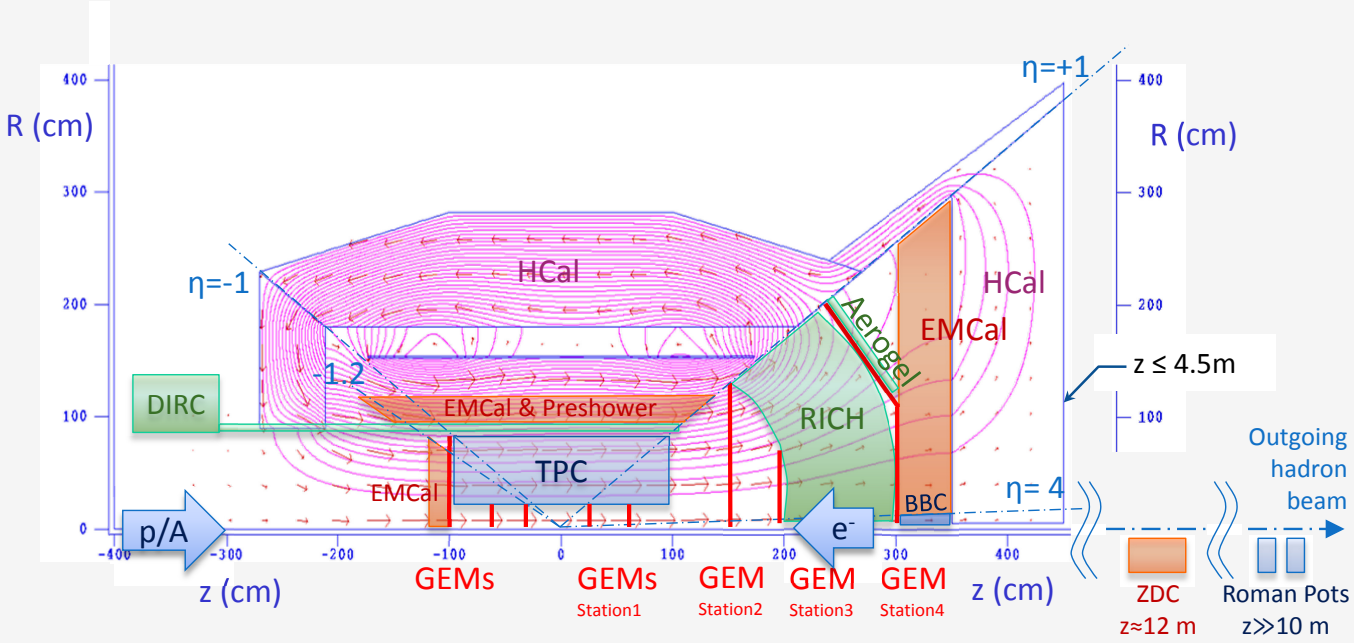
PHENIX

TECHNICAL SUPPORT 2014

2ft high x 1 ft wide clearance needed for e-ring components



ePHENIX



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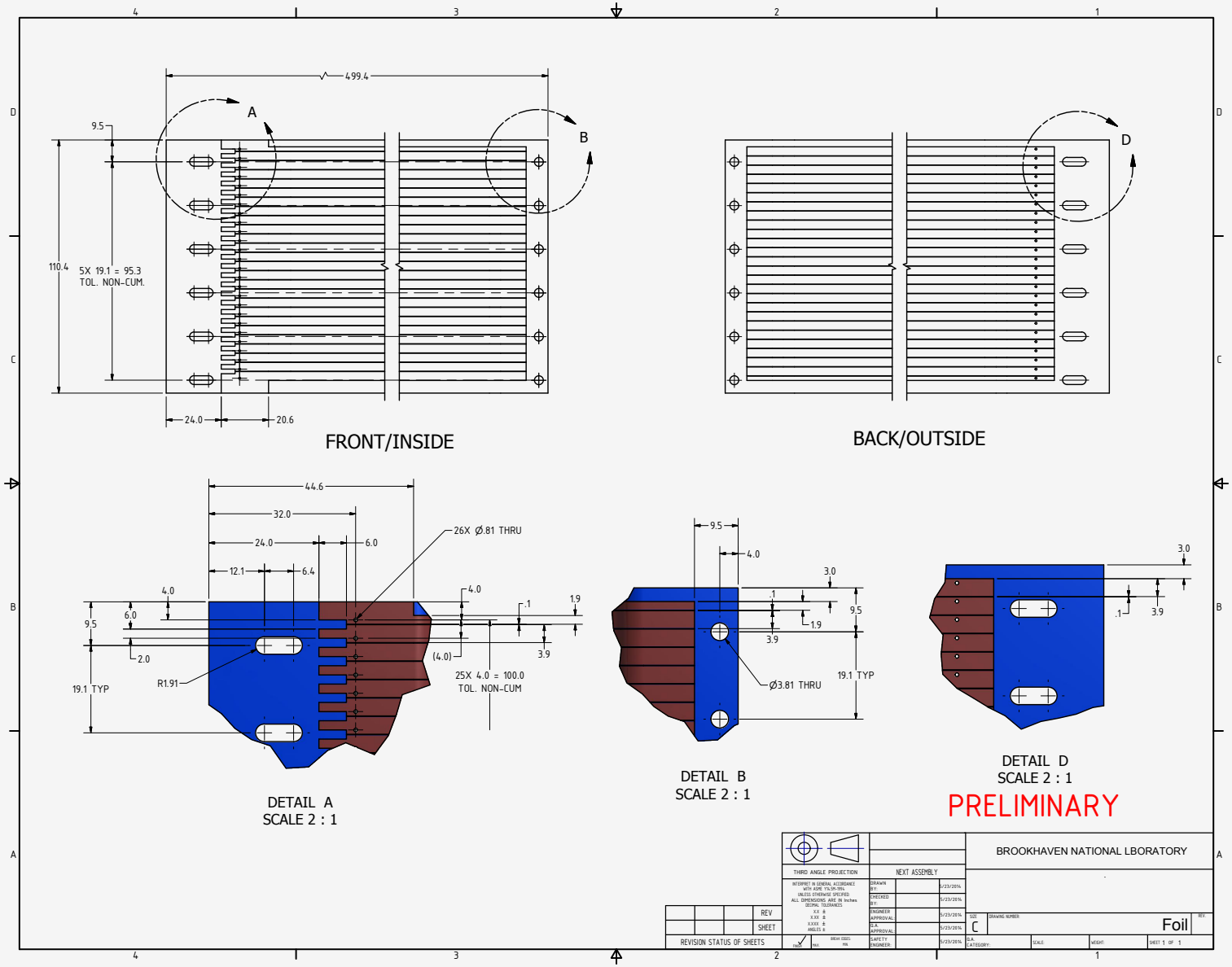
TECHNICAL SUPPORT 2014



Gem Foil Design for fsPHENIX/ePHENIX R&D: TPC Prototype

PHOENIX

TECHNICAL SUPPORT 2014

1. From Ray Karol/Mike Zarcone

   Work Screening for worker planned work

2. From CAD:

   ESS&H review week of June 2.

   OHSAS 18001 & EM 14001 Refresher Course, given to all CA-D personnel (reduced from 32 slides to 6)

Screening Tool for Worker Planned Work

Worker Planned Work can only be performed if the required number of barriers (controls) is in place as determined by the following screenings. All other work will require a work permit, prescribed work procedure, and/or additional controls.

Instructions: For each job/task/activity that will be performed, evaluate the ESSH, Complexity and Coordination attributes against the questions below. Unless the indicated minimum number of control questions are answered "YES" a work permit, prescribed work procedure, and/or additional controls are required.

1. **ESSH**: (Check this box if there are no ESSH hazards ☐) ESSH hazards are clearly understood; controls are established and implemented, there are no security concerns, and at least 4 of the following control questions are answered "YES":

Yes	No	
		Have all known hazard(s) and associated control(s) been evaluated using an institutional document (e.g., ESR, JRA, JSA, PHA, HASP or SWP) and have control(s) been implemented? (REQUIRED FOR ALL CONTRACTOR/VENDOR WORK.)
		Have all known hazard(s) and control(s) been documented (e.g., organizational procedure) and worker's provided verifiable training in how to properly verify hazard(s) and implement the required control(s)?
		Does an SBMS Subject Area(s) exist for the hazard(s) and workers have verifiable training in its implementation?
		Will the cognizant supervisor or engineer describe the job and its associated hazards and controls to workers and provide them an opportunity to ask questions prior to the start of work (e.g., job walk down, pre-job brief, Toolbox)?
		Will a dedicated and knowledgeable (e.g., trained to recognize the hazard(s) of the job) work oversight person be present at all times throughout the job?
		Will Contractor Vendor Orientation (CVO), Guest Site Orientation (GSO), or site-specific training be completed, or will an escort be assigned, for by those in need prior to start of work? (REQUIRED FOR ALL CONTRACTOR/VENDOR WORK)
		Will PPE be clearly identified for known hazard(s) and communicated (e.g., by supervisor, ESH, and/or area postings) to the worker(s) prior to commencement of work?
		Are engineered controls for known hazards in place and operational?

2. **Work Complexity**: All steps of the work to be accomplished are clearly understood by all workers involved, controls are established, and at least 5 of the following control questions are answered "YES":

Yes	No	
		Does the work activity contain less than 15 undocumented steps to complete?
		Can the job be performed without a written procedure, permit, or documented checklist that is required by any applicable SBMS Subject Area or regulation (e.g., Complex LOTO procedure, 2C Confined Space Entry Permit, Energized Electrical Work Permit)?
		Have personnel been trained in the proper use and execution of equipment(s), process(es), task(s), and tool(s) used to perform this job?
		Are workers familiar with the work location?
		Is the equipment clearly labeled and is the work location clearly identified?
		Can the job be performed without stressor(s) (e.g., time pressure, excessive overtime, heat, cold, etc.) and without verification of the worker's Fit for Duty status under this/these stressor(s) for this job?
		Can the job be performed without ergonomic challenges (e.g., awkward positions, repetitive motions for long periods, contact stress, excessive force, and ladder work for long periods, etc.)?
		Can the job be performed without cross checking look-alike equipment and location (e.g., similar areas & equipment are easily identified)?
		Can the job be performed without independent testing or inspection required by procedure, SBMS Subject Area or regulation (e.g., electrical inspection)?

3. **Work Coordination**: Work does not involve a Credited Control; work can be accomplished without coordination with other groups in the work area or without coordination with ESH personnel during the job/activity; **and at least 2 of the following control questions are answered "YES"**:

Yes	No	
		Has work has been scheduled through a maintenance coordinator or equivalent? (e.g., Research Space Manager, Cognizant Space Manager, Shop Supervisor)?
		Can work be performed without disabling, altering or changing an engineered safety related system (e.g., access controls, fire protection system, interlocks, fume hoods, shielding)?
		Will the work be conducted under one job supervisor for the entire job? (e.g., no supervisor/shift turnover during job)?

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TECHNICAL SUPPORT 2014

Collider-Accelerator Department and Superconducting Magnet Division

OHSAS 18001 Refresher

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TECHNICAL SUPPORT 2014

What is it?

It is a management system that targets health and safety issues
- BNL added the OHSAS 18001 conformance program to the regulation- based, compliance driven safety process
- Overall process for safety at DOE accelerators is a mix of compliance and conformance:

- Compliance
  - Laws: 10CFR835 (Radiation Protection), 10CFR851 (OSHA, NEC, NFPA, etc.)
  - DOE Orders applicable to accelerators: Accelerator Safety, QA, Facility Safety
  - SBMS requirements beyond Orders and Laws (e.g., O+ PPE for arc flash)
  - BSA contract requirements (e.g., Critical Outcomes, Performance Measures)
  - BSA Consent Decrees (e.g., Blueprint following well-house explosion)
- Conformance
  - Consensus standards: OHSAS 18001
  - DOE Orders through agreement with BHSO: DOE Conduct of Operations Order

What is required?

- **Set** a safety and health policy
- **Plan** work in order to ensure success
- **Implement** safety practices, programs and procedures
- **Monitor** and measure to evaluate compliance and conformance
- **Check** for and correct identified problems
- **Review** the entire OSH management system with top management and set/reset objectives

Main commitment: Provide a safe and healthy workplace!

Policy highlights:

- We are all responsible fors afety
- Consider thes afety of others
- Integrate ESSH into our research and operations
- Adhere to BNL ESSH requirements
- Reduce risks, conserveresources, protectproperty, prevent pollution – Assist stake holders with their ESSH needs
- Participate in community and government initiatives

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TECHNICAL SUPPORT 2014

What to know if you are interviewed:

1. BNL has an ESSH policy
2. Phone number for serious incident or injury is 2222 and/or 911
3. All work is planned, all workers are trained:
   - PHENIX Awareness
   - Daily planning
   - Weekly planning meetings
   - Work permits
4. Stop work for imminent danger
5. Report all concerns
6. Goals: zero injuries, zero violations, zero lost workdays, zero incidents
7. Answer any questions honestly, if you don't know say so.

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TECHNICAL SUPPORT 2014

Collider-Accelerator Department and Superconducting Magnet Division

EMS 14001 Refresher

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TECHNICAL SUPPORT 2014

Environmental, Safety, Security, and Health Policy



This document is a statement of Brookhaven National Laboratory's (BNL) Environmental, Safety, Security, and Health (ESSH) policy. BNL is a world leader in scientific research and performs this work in an environmentally responsible and safe manner.

I expect every employee, contractor, and guest to take personal responsibility for adhering to the following principles:

Environment:	We protect the environment, conserve resources, and prevent pollution.
Safety:	We maintain a safe workplace and we plan our work and perform it safely. We take responsibility for the safety of ourselves, coworkers, and guests.
Security:	We protect people, property, information, computing systems, and facilities.
Health:	We protect human health within our boundaries and in the surrounding community.
Compliance:	We achieve and maintain compliance with applicable ESSH requirements.
Community:	We maintain open, proactive, and constructive relationships with our employees, neighbors, regulators, DOE, and other stakeholders.
Continual Improvement:	We continually improve ESSH performance.

In addition to my annual review of BNL's progress on ESSH goals and adherence to this policy, I invite all interested parties to provide me with input on our performance relative to this policy, and the policy itself.

Signed _____ April 15, 2013

Doon Gibbs, Director

BROOKHAVEN NATIONAL LABORATORY

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TECHNICAL SUPPORT 2014

Our Safety and Environmental Management and Compliance Representatives:

Environmental Compliance Rep: Frank Craner x 205

Environmental Management Rep for C-AD: Ed Lessard

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TECHNICAL SUPPORT 2014

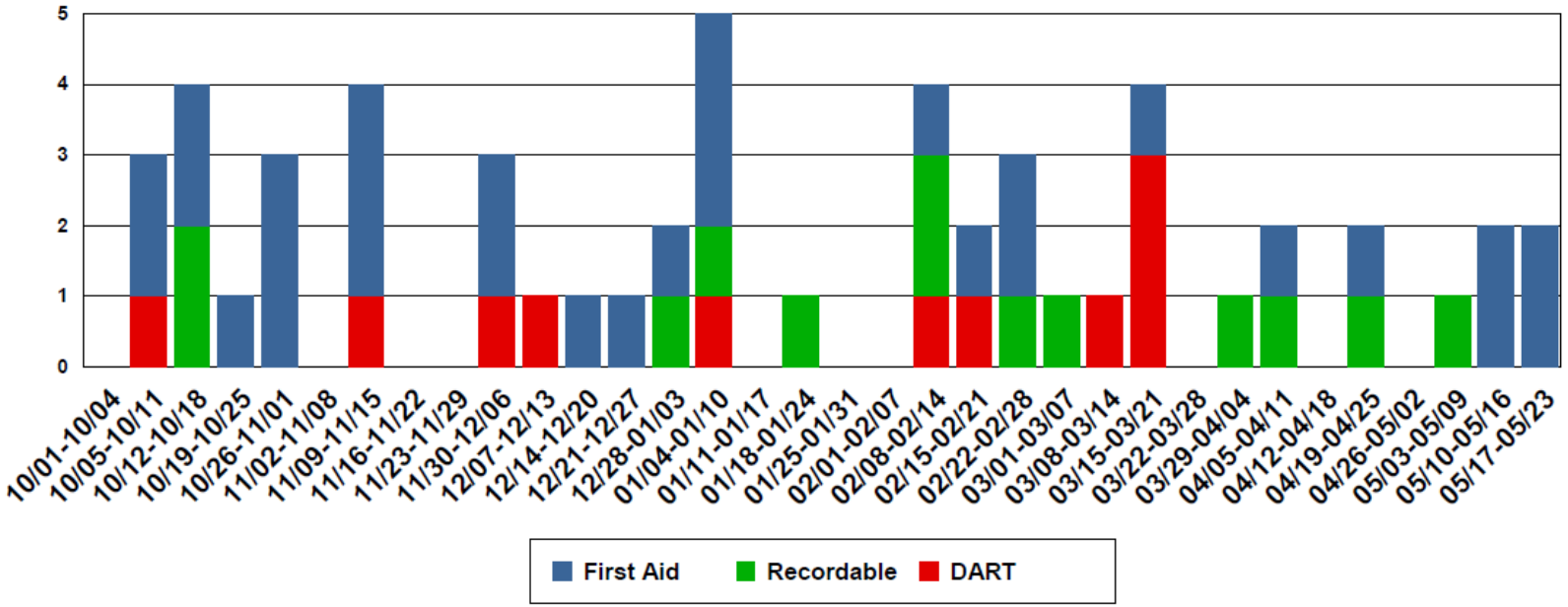
3. From Michael Hauptmann (new lessons learned)

Angle Grinder Fatality due to improper equipment modification

Grinder modified by removing safety guard to install 12 inch wheel in place of normal 9 inch wheel

- Incorrect tool used for the job.
- Lack of adequate supervision and clear instruction.
- Circumventing safety procedure (removal of the guard).
- Failure of management controls: risk assessment, safe operating procedure, providing safe method of work.
- Lack of situational awareness.
- Lack of adequate work planning.

Injuries Per Week (FY)
As of 5/23/2014



Injury Status:

FY14 YTD: DART – 11, TRC – 24, First Aid – 30
FY13: DART – 16, TRC – 38, First Aid – 53
FY12: DART – 19, TRC – 36, First Aid – 69

FY13 Injury Listing: https://intranet.bnl.gov/esh/shsd/seg/OccInj/BNLInjuries.aspx

Recent Injuries		
5/22/14	First Aid	An employee strained their right arm while working using both hands over their head to install new equipment. At the OMC, first aid was given.
5/22/14	Info Only	A student reported a burning sensation to his face while working with chemicals . At the OMC, first aid was given.
5/20/14	First Aid	An employee fell while walking in a parking lot, injuring their knee. At the OMC, first aid was given.

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Recent Events		
5/22/14	Non-Reportable	Two Building Grounds Utility Workers (BGUW) were working outside of Building 749 to pick up miscellaneous debris. One employee was on the ground as a spotter and the other employee was operating the skid steer loader and loading the wood debris into the back of the dump truck. While the worker operating the skid steer loader was attempting to reduce the size of a section of deck for loading, one of the deck posts hit the windshield and broke it. The only damage to equipment was the broken windshield on the skid steer loader. (Event Link)
4/30/14	SC-BNL	On April 30, 2014, a 10-lb. tank of hydrogen bromide gas was improperly delivered to Central Receiving (Bldg. 98). It was accepted at the warehouse and handled without the proper precautions that were required due to the hazardous nature of its contents. It was then transferred by warehouse staff to the Center for Functional Nanomaterials (CFN), from where it was ordered. Upon receipt, it was acknowledged to be extremely hazardous and was properly secured. On May 21, 2014, the event was anonymously reported, which prompted an immediate evaluation by management for reportability. A formal investigation is being initiated. (Event Link)

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Where To Find PHENIX Engineering Info

Run 14 Continues!
Less than
1-1/2 months to go !

May 29 In History:

1453 –Capture of Constantinople after a 53-day siege, ending the Byzantine Empire.
1886 – The Pharmacist John Pemberton places his first advertisement for Coca-Cola
1913 – Stravinsky's ballet score The Rite of Spring premiers in Paris, France
1919 –Einstein's theory of general relativity is tested by Eddington and de la Cherois Crommelin.
1942 – Bing Crosby records Irving Berlin's "White Christmas", the best-selling XMAS single ever
1953 –Hillary and Norgay become the first to reach the summit of Mount Everest

http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm